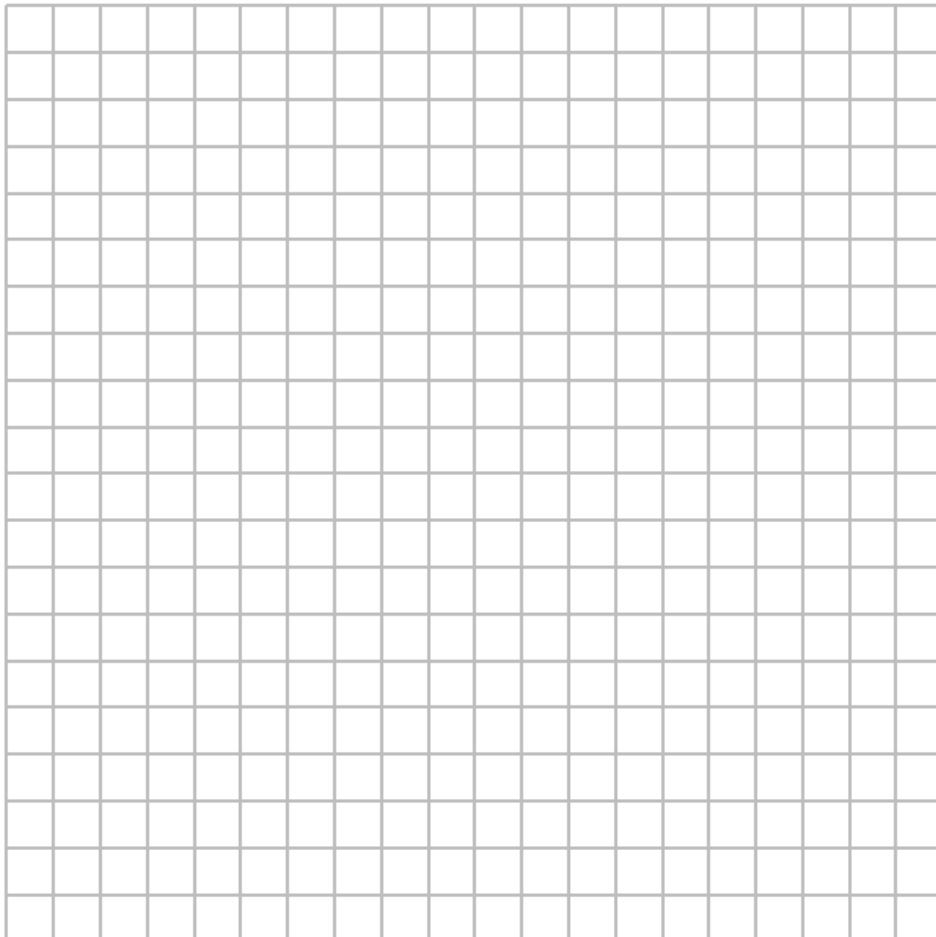


M\$5 Homework 36

1. What is the axis of symmetry of the parabola represented by the equation $y = 2x^2 + 16x - 11$?
2. An archer shoots an arrow into the air such that its height at any time, t , is given by the function $h(t) = -16t^2 + kt + 3$. If the maximum height of the arrow occurs at time $t = 4$, what is the value of k ?
3. Montana and her brother Edward were racing remote control cars. The speed of Montana's car is represented by the equation $s(t) = 25t^2 - 32$, where t represents the time in seconds. The speed of Edward's car is represented by the equation $s(t) = 7t^2 + 15t$. How many seconds, to the *nearest tenth* of a second, does it take for the speed of two cars to be equal? [Only an algebraic solution will be accepted.]
4. A pelican flying in the air over water drops a crab from a height of 30 feet. The distance the crab is from the water as it falls can be represented by the function $h(t) = -16t^2 + 30$, where t is time, in seconds. To catch the crab as it falls, a gull flies along a path represented by the function $g(t) = -8t + 15$. Graph and label both equations on the grid below. Can the gull catch the crab before the crab hits the water? Justify your answer.



5. The path of a rocket fired during a fireworks display is given by the equation $s(t) = 64t - 16t^2$, where t is the time, in seconds, and s is the height, in feet.

Graph and label the equation on the accompanying grid.

What is the maximum height, in feet, the rocket will reach?

In how many seconds will the rocket hit the ground?

